QUALITY CONTROL REPORTS FOR

WET MIX MACADAM (WMM)

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/MSM/Gradation/2016-17 18.04.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr . M. Srinivasa Murthy**
#17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86

Name of Work : Improvements to Roads and Drains at TATA nagara Surroundings in Ward No.08, Kodigehalli Sub Division BBMP, Bangalore.

Reference : AEE(KSB)/PR/16-17 Dated; 04.04.2016

Date of Testing : 18.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6430**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	160	160	2.5	97.5	95-100
22.4	2180	2340	36.4	63.6	60-80
11.2	1230	3570	55.5	44.5	40-60
4.75	950	4520	70.3	29.7	25-40
2.36	630	5150	80.1	19.9	15-30
0.600	590	5740	89.3	10.7	8-22
0.075	530	6270	97.5	2.5	0-8

A&S

Assistant Engineer,
Kodigehalli Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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Bangalore-560079.

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Job No.: CTCE/BBMP/W.No.08/MSM/Gradation/2016-17 18.04.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Mr . M. Srinivasa Murthy**
#17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86

Name of Work : Improvements to Roads and Drains at TATA nagara Surroundings in Ward No.08, Kodigehalli Sub Division BBMP, Bangalore.

Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 18.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6450**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	165	165	2.6	97.4	95-100
22.4	2220	2385	37.0	63.0	60-80
11.2	1245	3630	56.3	43.7	40-60
4.75	930	4560	70.7	29.3	25-40
2.36	610	5170	80.2	19.8	15-30
0.600	580	5750	89.1	10.9	8-22
0.075	510	6260	97.1	2.9	0-8

A&S

Assistant Executive Engineer, Kodigehalli Sub Division, B.B.M.P., Yelahanka, Bangalore.

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GRADATION FOR WMM
MORTH TABLE-400-11

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Agency : **Mr . M. Srinivasa Murthy**
#17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86

Name of Work : Improvements to Roads and Drains at TATA nagara Surroundings in Ward No.08, Kodigehalli Sub Division BBMP, Bangalore.

Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 18.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6510**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	250	250	3.8	96.2	95-100
22.4	2180	2430	37.3	62.7	60-80
11.2	1240	3670	56.4	43.6	40-60
4.75	930	4600	70.7	29.3	25-40
2.36	610	5210	80.0	20.0	15-30
0.600	580	5790	88.9	11.1	8-22
0.075	510	6300	96.8	3.2	0-8

A&B

1

Assistant Engineer, Kodigehalli Division, B.M.P., Bangalore.

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GRADATION FOR WMM
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Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 18.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6500**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	230	230	3.5	96.5	95-100
22.4	2250	2480	38.2	61.8	60-80
11.2	1245	3725	57.3	42.7	40-60
4.75	930	4655	71.6	28.4	25-40
2.36	610	5265	81.0	19.0	15-30
0.600	580	5845	89.9	10.1	8-22
0.075	510	6355	97.8	2.2	0-8

A&S

Assistant Executive Engineer, Kodigehalli Sub Division, B.B.M.P., Yelahanka [illegible] Bangalore.

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Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 19.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6570**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	190	190	2.9	97.1	95-100
22.4	2150	2340	35.6	64.4	60-80
11.2	1230	3570	54.3	45.7	40-60
4.75	950	4520	68.8	31.2	25-40
2.36	620	5140	78.2	21.8	15-30
0.600	610	5750	87.5	12.5	8-22
0.075	610	6360	96.8	3.2	0-8

A&B

Assistant Executive Engineer, Kodigehalli Sub Division, B.B.M.P., Yelahanka ... Bangalore.

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Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 19.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6430**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	180	180	2.8	97.2	95-100
22.4	2155	2335	36.3	63.7	60-80
11.2	1240	3575	55.6	44.4	40-60
4.75	930	4505	70.1	29.9	25-40
2.36	620	5125	79.7	20.3	15-30
0.600	580	5705	88.7	11.3	8-22
0.075	545	6250	97.2	2.8	0-8

A&E

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka - Ward, B.B.M.P.,
Bangalore.

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Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 19.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6470**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	210	210	3.2	96.8	95-100
22.4	2230	2440	37.7	62.3	60-80
11.2	1240	3680	56.9	43.1	40-60
4.75	910	4590	70.9	29.1	25-40
2.36	630	5220	80.7	19.3	15-30
0.600	545	5765	89.1	10.9	8-22
0.075	505	6270	96.9	3.1	0-8

AE&B

Assistant Engineer, Kodigehalli Sub Division, B.B.M.P., Yelahanka Zone, Bangalore.

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Date of Testing : 19.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6570**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	260	260	4.0	96.0	95-100
22.4	2170	2430	37.0	63.0	60-80
11.2	1230	3660	55.7	44.3	40-60
4.75	910	4570	69.6	30.4	25-40
2.36	630	5200	79.1	20.9	15-30
0.600	590	5790	88.1	11.9	8-22
0.075	520	6310	96.0	4.0	0-8

AE-8 1

Assistant Executive Engineer, Kodigehalli Sub Division, Yelahanka Zone, B.B.M.P., Bangalore.

Civil-Tech Consultants & Engineers Bangalore

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Reference : AEE(KSB)/PR/16-17 Dated: 04.04.2016

Date of Testing : 19.04.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **6420**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	210	210	3.3	96.7	95-100
22.4	2230	2440	38.0	62.0	60-80
11.2	1250	3690	57.5	42.5	40-60
4.75	910	4600	71.7	28.3	25-40
2.36	630	5230	81.5	18.5	15-30
0.600	510	5740	89.4	10.6	8-22
0.075	490	6230	97.0	3.0	0-8

AE-8

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr . M. Srinivasa Murthy** #17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86
Name of Work	Improvements to Roads and Drains at TATA nagara Surroundings in Ward No.08, Kodigehalli Sub Division BBMP, Bangalore.
Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	19.04.2016

Result : Flakiness Index = **12.35%**

Elongation Index = **13.85%**

Result : Combined Flakiness & Elongation index 26.20%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	19.04.2016

Result : Flakiness Index = **12.10%**

Elongation Index = **13.20%**

Result : Combined Flakiness & Elongation index **25.30%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

AE-8

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Assistant Executive Engineer, Kodigehalli Sub Division, B.B.M.P., Yelahanka, Bangalore.

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Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	19.04.2016

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.80%**

Elongation Index = **12.60%**

Result : Combined Flakiness & Elongation index **24.40%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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AE-8

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka [illegible], B.B.M.P.,
Bangalore.

****

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr . M. Srinivasa Murthy** #17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86
Name of Work	Improvements to Roads and Drains at TATA nagara Surroundings in Ward No.08, Kodigehalli Sub Division BBMP, Bangalore.
Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	19.04.2016

Result : Flakiness Index = **11.90%**

Elongation Index = **12.80%**

Result : Combined Flakiness & Elongation index **24.70%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

AE-B

Note:

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Assistant Executive Engineer, Kodigehalli Sub Division, B.B.M.P., Yelahanka, Bangalore.

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Bangalore-560079.

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Job No.: CTCE/BBMP/W.No.08/MSM/WMM/S-T/2016-17 19.04.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

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Agency	**Mr . M. Srinivasa Murthy** #17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86
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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	19.04.2016

Result : Flakiness Index = **11.60%**

Elongation Index = **12.95%**

Result : Combined Flakiness & Elongation index 24.55%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

AE-8

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Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Mr . M. Srinivasa Murthy** #17, Jyothi gas godown, 6th cross, Kurubarahalli, Bangalore-86
Name of the Work	Improvements to Roads and Drains at TATA nagara Surroundings in Ward No.08, Kodigehalli Sub Division BBMP, Bangalore.
Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.04.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	91	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	299	
4	Aggregate Impact value = percent fines	20.78	23.33	
	$100*(W_2/W_1)$%			22.06

AE-8

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.04.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	92	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.02	23.41	
	$100*(W_2/W_1)$%			22.72

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.04.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	390	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.02	22.82	
	$100*(W_2/W_1)$%			22.42

AE-8

Assistant Executive Engineer, Kodigehalli Sub Division, Yelahanka Zone, B.B.M.P, Bangalore.

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Civil-Tech Consultants & Engineers Bangalore

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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.04.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	388	395	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	93	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	302	
4	Aggregate Impact value = percent fines	22.16	23.54	
	$100^* (W_2/W_1)\%$			22.85

AE-S

Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.
Bangalore

Comments:

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Reference	AEE(KSB)/PR/16-17 Dated: 04.04.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	19.04.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	73	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	303	
4	Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$	19.47	22.11	20.79

AE-8

Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Yelahanka Zone, Bangalore.

Comments:

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